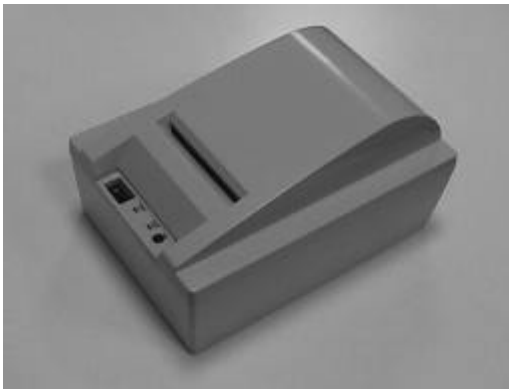


# **PP4000 Series Thermal Printer**

## **User's Guide**

**Rev.: Original**



## **Federal Communications Commission Radio Frequency Interference Statement**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For compliance with Federal Noise Interference Standard, this equipment requires a shielded cable.

This statement will be applied only for the printers marketed in U.S.A.

### **CE manufacturer's Declaration of Conformity (EC Council Directive 89/336/EEC of 3 May 1989)**

This product has been designed and manufactured in accordance with the International Standards EN50081-1/01.92 and EN50082-1/01.92 following the provisions of the Electro Magnetic Compatibility Directive of the European Communities as of May 1989

### **Warranty Limits**

Warranty will terminate automatically when the machine is opened by any person other than the authorized technicians. The user should consult his/her dealer for the problem happened. Warranty voids if the user does not follow the instructions in application of this merchandise. The manufacturer is by no means responsible for any damage or hazard caused by improper application.

### **About This Manual**

This manual is aimed to assist the user to utilize the PP4000 series which is a series of POS thermal printers delicately designed to work with either serial or parallel interface connection. This manual covers both operational and technical aspects. This manual is revised to cover also the Epson emulation commands and some frequently asked questions.

The manufacturer of the PP4000 series heartily apologizes to the user for reserving the right to change or to modify this manual without notice due to the rapid and constant progress and improvement on science and technology. The user may always obtain the most up to date information through our web site:

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# **I. GETTING STARTED**

## **A. CONGRATULATION**

You have made a very wise decision by purchasing the high speed – low noise –high resolution – light weight – high reliability thermal printer PP4000 series of Posiflex products. This series of printers has been elegantly designed for a Point-Of-Sale application. The manufacturer of this printer not only wishes to take this opportunity to congratulate your smart investment on buying this printer but also likes to express the wishes for your prosperous future by using it.

## **B. PRODUCT BRIEFING**

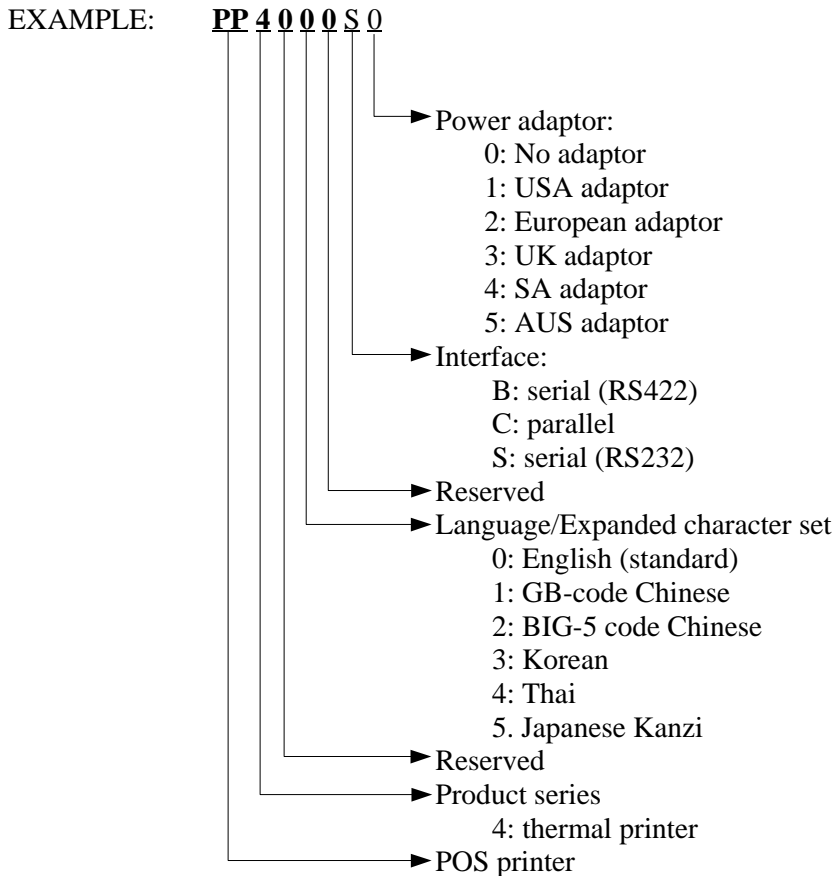
The PP4000 series printer uses thermal sensitive paper in form of a roll at a width of 80 mm. The PP4000 printer serves the stand-alone POS application as well as the application within a PST system equally perfect.

The PP4000 series can support different interface input through different sub-codes to the model number. The interfaces include RS232 for serial interface and Centronics for parallel interface. PP4000 printer of different model number sub-codes utilizes different connector, accessory cable and part of internal circuitry to accommodate the requirement of different interface. As a variation from the RS232 for serial interface, RS422 serial interface is also available.

In addition to the capability of supporting international character sets, there are also some models in PP4000 series that supports the oriental characters as indicated in the following paragraph about model numbers.

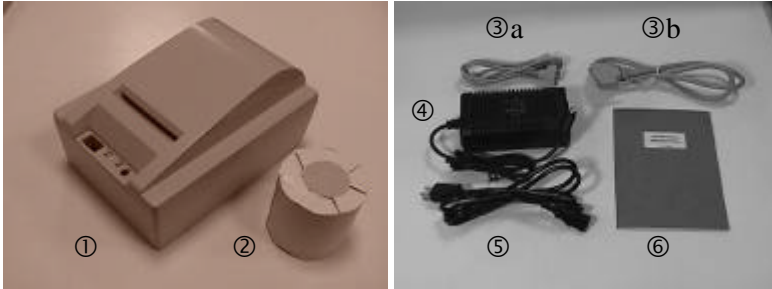
The PP4000 supports an auto cutter. The PP4000 also supports application in different countries of various kinds of power systems by changing the power adaptor and/or the power cord to the power adaptor. The PP4000 further supports some built-in bar code printing commands for UPC-A, EAN8, EAN13, CODE 39, ITF and CODABAR.

## C. MODEL NUMBERS



The last two digits in the model number structure as explained above are called sub-codes. The rest are the basic model number.

## D. UNPACKING

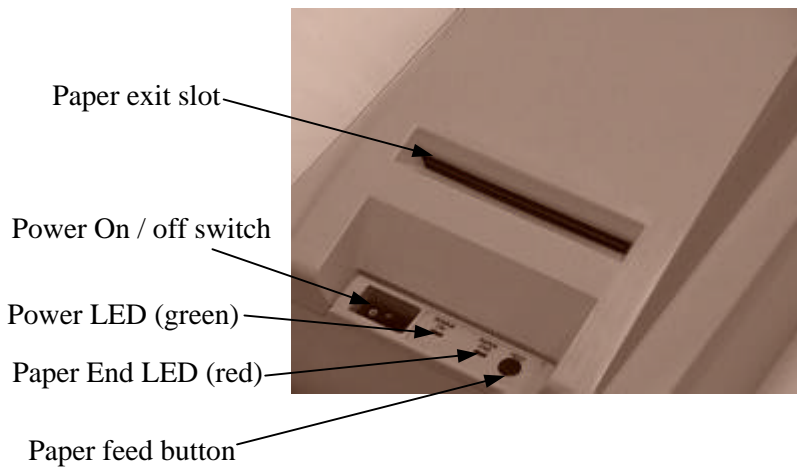
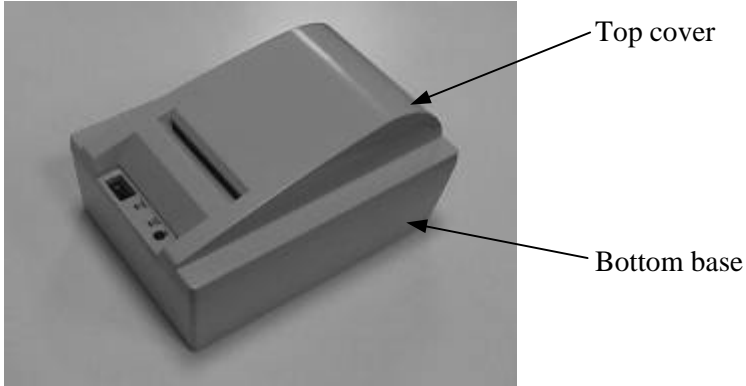


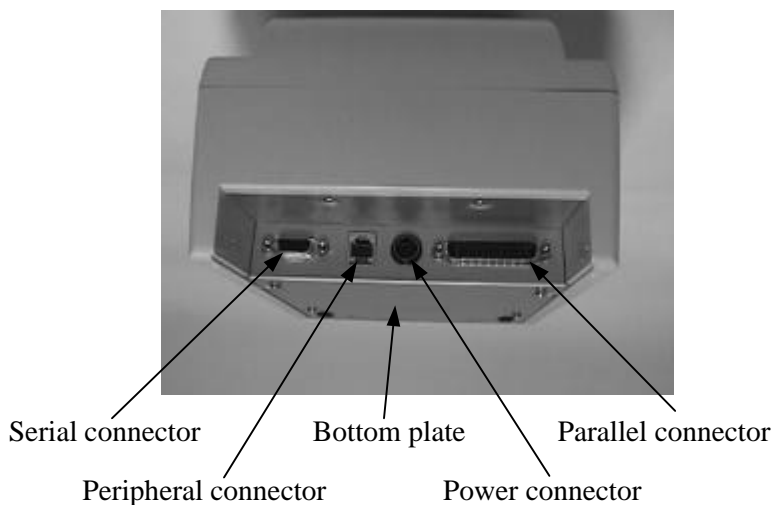
As illustrated in the above picture, followings are items you may find when you carefully unpack the carton that delivers PP4000 series printer. If there is any discrepancy or problem, contact your dealer immediately. **Be sure to save the packing materials in the event that the printer needs to be shipped at some point in the future.**

- ① The printer itself. Choices are PP4000S, PP4000C and PP4000B.
- ② Thermal paper roll. 80 mm wide, outer diameter 83 mm max.
- ③a Serial cable with 9 pin D sub Female to 9 pin D sub Male connectors for PP4000S
- ③b Parallel cable with 25 pin D sub Male to 25 pin D sub Female connectors for PP4000C
- ④ Power adaptor. (depends on sub-code ordered)
- ⑤ Power cord for power adaptor (depends on sub-code ordered)
- ⑥ This User's Manual



## E. MAIN PARTS ON THE EXTERIOR





## F. INDICATORS

- POWER LED: green
- PAPER END INDICATOR: red. Different lighting pattern indicates each error status.

Lighting pattern	Meaning
Constant light up	Paper End
Constant blinking	Paper Near End
1 blink plus OFF 1.2 seconds	ABMARK
2 blinks plus OFF 1.2 seconds	HEAD UP
3 blinks plus OFF 1.2 seconds	TEMPERR
4 blinks plus OFF 1.2 seconds	VOLTERR
5 blinks plus OFF 1.2 seconds	HWRERR

## **G. OPERATING ENVIRONMENT**

- Place the printer on a sturdy, level surface.
- Choose a place that is well ventilated and free of excessive dust, smoke or fume.
- Do not put the printer in direct sunlight or near a heater.
- Ideal room temperature is from 5°C to 40°C. Ideal humidity is from 20% to 85% RH (no condensation).
- Since the paper roll is very thermal sensitive, please keep them in a dark place that is 20° and 65% RH when not installed in the printer.
- Use a grounded AC power outlet.
- Use only the power cord and power adaptor furnished with the printer.
- Do not use a power outlet of a circuit shared with any equipment that causes great electrical noise, such as motors.
- Do not use a power outlet of a circuit shared with any equipment that uses a lot of power, such as a copier or a coffee maker.
- Do not touch any connector contacts to avoid possible electrostatic damage.

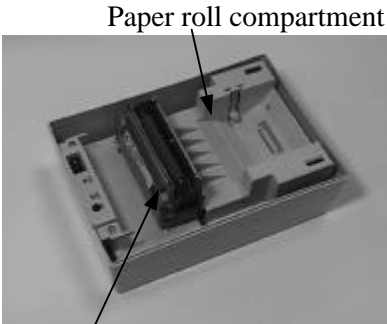
## H. USEFUL TIPS

- Do not pull the paper in the direction opposite to the paper feeding direction with the print head closed.
- Do not touch the areas around the print head and motor during or right after printing. It can be very hot.
- Do not use thermal paper containing Sodium (Na+), Potassium (K+) and Chlorine (Cl-) ions that can harm the print head thermal elements.
- Use only water paste, starch paste, polyvinyl paste or CMC paste when gluing thermal paper.
- Use of volatile organic solvents such as alcohol, ester and ketone on thermal paper can cause discoloration.
- Some adhesive tapes on thermal paper may cause discoloration or faded printing.
- Use only products made from polyethylene, polypropylene or polyester for storage of thermal paper. If thermal paper touches anything includes phthalic acid ester plasticizer for a long time, the image formation ability may be reduced or the printed image may fade.
- If thermal paper touches diazzo copy paper immediately after copying, the printed surface may be discolored.
- Thermal paper must not be stored with the printed surfaces against each other as the printing may be transferred between the surfaces.
- If the surface of thermal paper is scratched with a hard metal object such as a nail, the paper may become discolored.

- Store thermal paper away from high temperature and humidity. Avoid extended exposure to direct light.
- Do not set any liquid or drinks such as coffee on the printer case

## II. QUICK START-UP

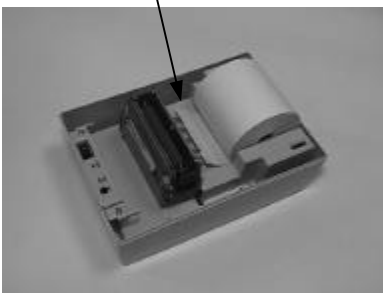
### A. LOADING PAPER



Thermal print engine

Open top cover by gently pressing the rear part of cover inward and lift it up. Take the cover away to expose the paper roll compartment and the thermal print engine.

Note direction of paper roll



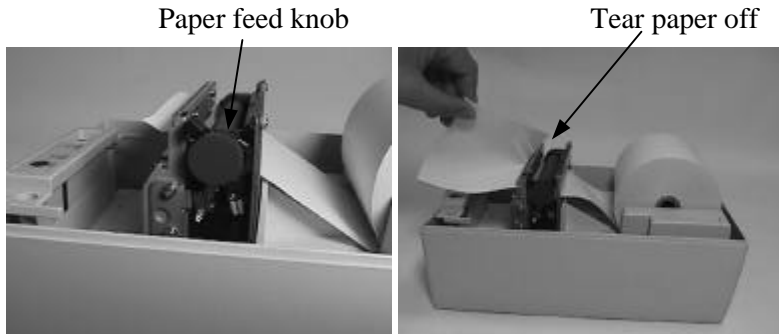
Head-up lever

Rear insert slot



Put the paper roll into the paper roll compartment in the direction shown as above. Push down the head-up lever on

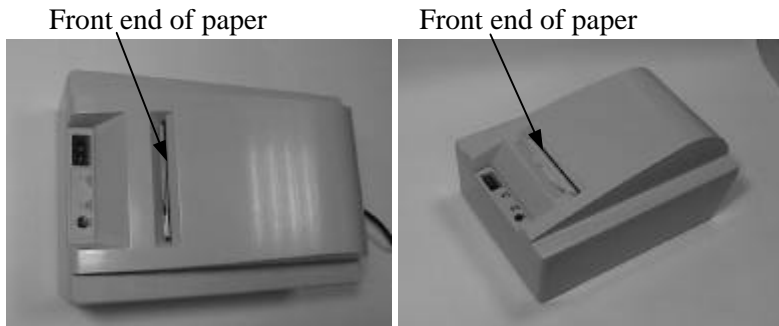
thermal print engine and try to aim the front end of the paper roll toward the rear insert slot.



When the front end is inserted into the rear insert slot, close up the head-up lever and turn the paper feed knob to roll the paper forward. If the paper is not inserted in proper position, you may push down the head-up lever and adjust the position of paper and close up the head-up lever again.

## **1. Auto paper feed**

This printer automatically feeds paper forward about 4 mm every time it is powered up or every time the head-up lever is closed up during power on. Therefore, you may tear the front end of paper roll off against the auto cutter assembly. You may then put on the top cover back and have the new front end of paper come out to the paper exit slot automatically when the printer is powered on.



## **2. Manual paper feed**

You may also extend the front end of paper out of the paper exit slot of the top cover and put top cover back to the printer case. Tear the paper off or cut the paper by software command later.

## **3. When to replace paper**

Whenever the printer gives paper near end signal or a red line appears on the thermal paper, it is the proper timing for replacing the paper. Do not wait till the print engine is dragging the paper roll at the very end. Remove the leftover and replace a new paper roll as illustrated above to prevent excessive paper dust in the printer and consequently possibility for paper jam.



## B. CONNECTING CABLES

### 1. SERIAL CONNECTION



This cable comes from any  
COM port of host computer

All connectors are at the  
bottom rear

All the external connectors are in the recessed area at the rear bottom. The serial connector is a 9 pin D sub Female connector at the left. Apply this cable only for serial application of the serial model. The protocol used in serial connection is always 19200 bps, none parity, 8 data bits, 1 stop bit.

## 2. PARALLEL CONNECTION



This cable connects to LPT port of the host computer

The parallel connector is a 25 pin D sub Male connector at the rightmost location in the connector area. Apply this cable only for parallel model.

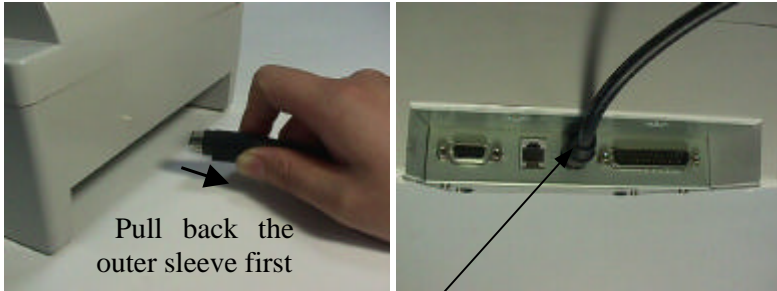
## 3. PERIPHERAL CONNECTION



This cable goes to cash drawer.

The peripheral controller is a RJ11 jack near the serial connector. With use of Posiflex special split cable (CCBLA-238 as an option) for cash drawer control, this port can control two cash drawers.

#### 4. POWER CONNECTION



Power connector from power adaptor

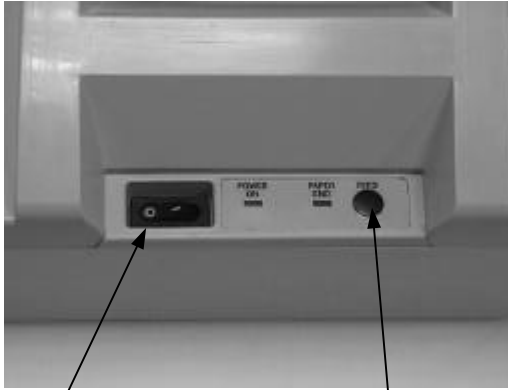
The power connector is a 3 pin jack between the peripheral connector and the parallel connector. During insertion, be sure to hear the click to obtain a firm contact.

**CAUTION:** Before doing the insertion or extraction of the power plug, be sure to pull the outer sleeve of the plug backward to release the internal latch. Failure to do this could damage the power plug. Such damage is considered as an artificial destruction and is not covered by the warranty.

#### 5. POWER ON

When all the above cable connections are made correctly, you may connect your power adaptor to the wall outlet. Make sure that the type of power cord and the voltage requirement of the power adaptor meet the local power conditions. Now the printer is ready for power on.

## 6. SELF TEST



On / off switch

Paper feed button

Press and hold down the paper feed button while turning the on / off switch on. The printer will then perform a self test. A slip of self test result is printed below. Please note that the content of such print is always the same no matter what interface or communication protocol is used.

Please note that there could be some mild vibration of the printer due to intermittent pulling on the paper roll by the motor. This vibration would be lighter with thinner paper roll and higher printing speed and heavier with thicker paper roll and lower printing speed.



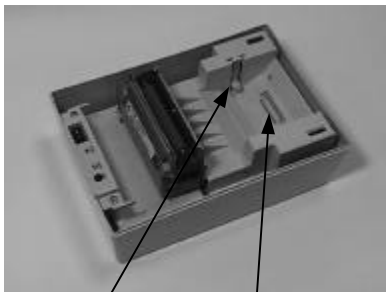
# III. MAINTENANCE AND INTERNAL PARTS

## A. MAINTENANCE GUIDE LINES

- Always turn off and disconnect power before opening the cover.
- The areas around the print head and motor become very hot during and just after printing, do not touch them.
- When handling the interior of the thermal printer, please pay attention not to be hurt by any sharp edge of the metal parts.

## B. INTERNAL PARTS

When the top cover of the thermal printer is removed, in paper roll compartment we can find a paper roll supporting roller and a paper near end sensor, in front of the print engine there is an auto cutter assembly.



Paper near  
end sensor

Paper roll  
supporting roller

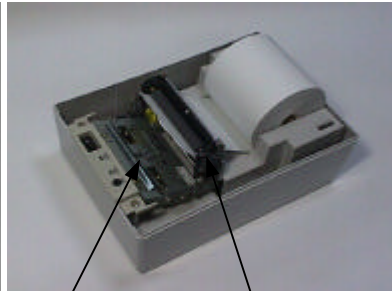
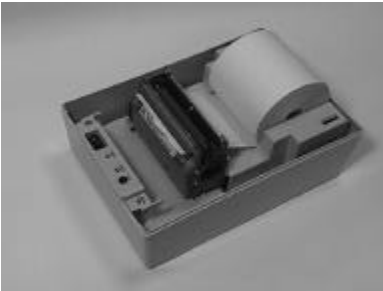


Auto cutter  
assembly

Paper feed  
knob

## C. PAPER JAM

In case of paper jam, please open the top cover and push down the auto cutter assembly so that it could be easier to get the messed up portion of the thermal paper when the head-up lever is pushed down.

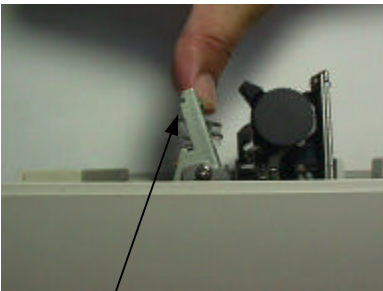


Push down the auto  
cutter assembly

Push down the  
head-up lever

## D. PRINT HEAD CLEANING

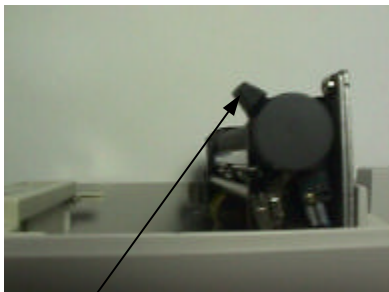
The whole process of getting access to the print head is illustrated in the following pictures:



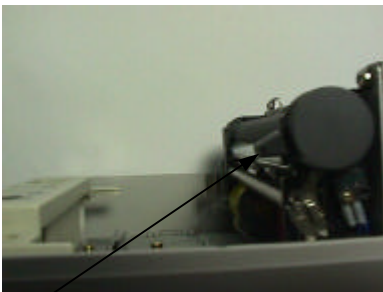
Start pushing the auto  
cutter assembly down



All the way down to level



Head-up lever at up position



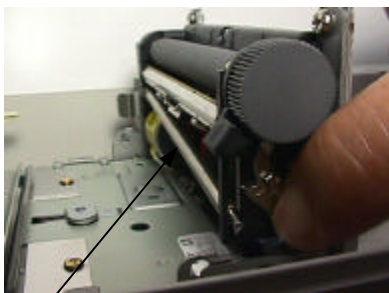
Head-up lever at normal down position



Push head-up lever further down



Freeing the movement of the guide plate

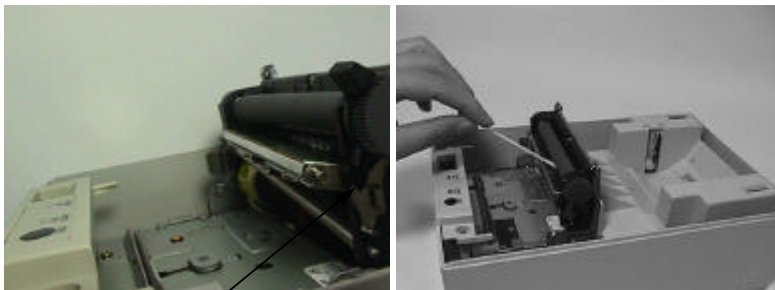


Pull the lug on guide plate backward to release the clamp rod



The print head is now free to move as the clamp rod is released





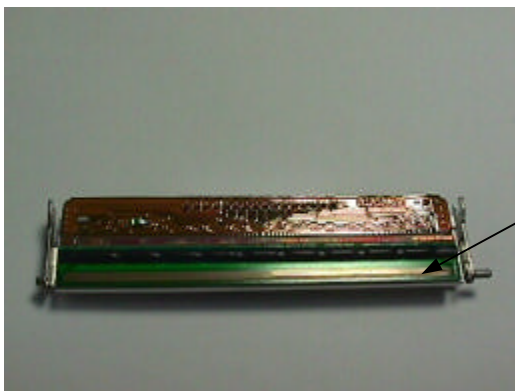
Guide slot of print head

Gently move the print head along its guide slot out (do not damage the cabling to it and **never do this when print head is still hot**), you can clean the thermal elements of the print head using a cotton swab moistened with alcohol solvent (ethanol, methanol, IPA)

**NOTE: Do not touch the print head thermal elements**

**Do not scratch the print head**

Before re-assuming the print head position, alcohol solvent should be dried completely.



Thermal elements

## IV. SPECIFICATIONS

### A. PRINTER

ITEM	SPECIFICATION
Printing method	Thermal sensitive line dot method
Effective printing width	72 mm
Thermal head configuration	576 dots / line
Printing speed (max.)	80 mm / sec. @ 24 V, standard paper, high speed
Paper feed method	Friction auto-feed
Paper feed entrance	Rear insertion
Auto-cutter capability	Full cut / Partial cut per software command
Partial cut gap	Approx. 2 mm at the center
Input power type	DC
Input voltage	24 V + / - 5 %
Power consumption	0.12 A @ stand by
	1.25 A @ printing
	4.50 A @ max.
Dimension (mm)	168 (W) x 233 (D) x 127 (H)
Weight	1.4 Kg net, 2.1 Kg w/ power adaptor

### B. PAPER

Paper type	Thermal roll paper
Paper roll formation	External side is heat-sensitive side
Paper width	80 + 0 / - 1 mm
Paper roll outer diameter	83 mm max.
Paper roll inner diameter	12 + 1 / - 0 mm

## C. POWER ADAPTOR

ITEM	REQUIREMENT
INPUT VOLTAGE	100 V AC ~ 250 V AC
INPUT FREQUENCY	50 ~ 60 HZ
INPUT CURRENT	1.5 A MAX.
OUTPUT VOLTAGE	+ 24 V DC
OUTPUT POWER	52 W MAX.
STATIC LOAD	0 A ~ 2.2 A
OUTPUT REGULATION	+ / - 5 %
VPP RIPPLE & NOISE	240 mV
MTBF	30,000 HRS
EMI STANDARDS	VDE – B, FCC – B, VCCI – B
SAFETY STANDARDS	UL, CSA, TUV, CE

# V. TECHNICAL INFORMATION

## A. INTERFACES

### 1. SERIAL INTERFACE

#### a.RS232

The standard serial interface applicable to PP4000S is RS232. The communication protocols in RS232 are: 19200 bps, none parity, 8 data bits, 1 stop bit. These settings are fixed, not for change. The RS232 connection is done through a 9 pin D sub female connector with following pin assignments:

Pin #	Definition	Pin #	Definition	Pin #	Definition
1	N.C.	4	DTR	7	N.C.
2	TXD	5	GND	8	CTS
3	RXD	6	DSR	9	N.C.

#### b.RS422

RS422 is the serial interface applicable to PP4000B. Similar to RS232, the communication protocols in RS422 are: 19200 bps, none parity, 8 data bits, 1 stop bit. These settings are also fixed and not for change. The RS422 connection uses the same 9 pin D sub female connector used in RS232 with following pin assignments:

Pin #	Definition	Pin #	Definition	Pin #	Definition
1	RD+	4	CS-	7	SD-
2	RD-	5	GND	8	RS+
3	CS+	6	SD+	9	RS-

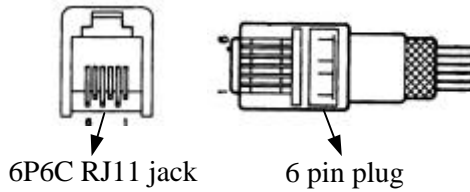
## 2. PARALLEL INTERFACE

The communication interface applied in PP4000C is the Centronics parallel interface using a 25 pin D sub male connector with the following pin assignments:

Pin #	Definition	Pin #	Definition	Pin #	Definition
1	-STROBE	10	-ACK	18	GND
2	D0	11	BUSY	19	GND
3	D1	12	P.E.	20	GND
4	D2	13	SLCT	21	GND
5	D3	14	N.C.	22	GND
6	D4	15	-ERROR	23	GND
7	D5	16	N.C.	24	GND
8	D6	17	N.C.	25	GND
9	D7				

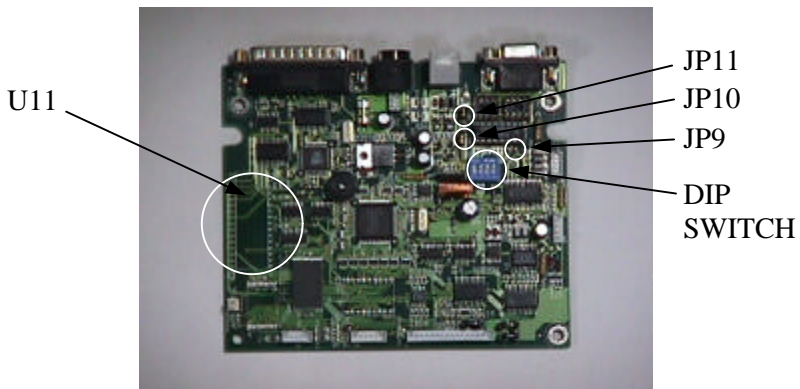
## 3. PERIPHERAL INTERFACE

The connector for peripheral control is a 6P6C RJ11 jack with the following pin assignment. The best recommended cash drawers to this connector are Posiflex CR3100 and CR3200. Using the cable CCBLA-180 delivered with the cash drawer, the PP4000 series can control one dedicated cash drawer. However, by using an optional split cable CCBLA-238, PP4000 series controls two cash drawers through this connector.



PIN #	Definition	Description
1	FG	Frame ground
2	CRB	Drawer kick for cash drawer controlled by software command Esc p 0 n1 n2
3	SENSE	Input peripheral status
4	VCC	+ 24 V DC supply
5	CRA	Drawer kick for cash drawer controlled by software command Esc p 1 n1 n2
6	SG	Signal ground

## B. HARDWARE SETTINGS



When the bottom metal plate is removed by a qualified technician, you can see the control board from the bottom as shown in the above picture. Please be reminded that such operation, if not done by a qualified technician, voids the warranty. There are 3 jumpers and 1 DIP switch as circled in white determine the characteristics of the printer besides some difference in components. Their functions are explained below:

Jumpers vs. interfaces	<b>JP11</b>	<b>JP10</b>	<b>JP9</b>
Serial RS232 interface	1-2 short	2-3 short	Open
Serial RS422 interface	2-3 short	2-3 short	Open
Parallel interface	Open	1-2 short	Short

The 4 position DIP switch works as following:

<b>Switch position</b>	<b>ON</b>	<b>OFF</b>
1	Determined by factory setting for printer mechanism used	
2		
3	Flash ROM exists	Without flash ROM
4	Paper cutting at self test	No paper cutting at self test

The U11 is the font style memory for two byte characters. It is different to each other of different language character set.

## C. SOFTWARE COMMANDS

### Codes (HEX / CONTROL) : COMMAND NAME

- (1) 09 / <HT> : Horizontal tab
- (2) 0A / <LF> : Line feed with printing
- (3) 0C / <FF> : Forms feed
- (4) 1B 19  $n$  / <ESC> <EM>  $n$  : Setting the amount of the feeding at automatic paper feed
- (5) 1B 1E / <ESC> <RS> : Black - white reversed printing specification
- (6) 1B 1F / <ESC> <US> : Black - white reversed printing cancellation
- (7) 1B 21  $n$  / <ESC> “!”  $n$  : Printing mode specification
- (8) 1B 25  $n$  / <ESC> “%”  $n$  : Download character set specification / cancellation (valid only when optional memory is installed)
- (9) 1B 26  $y c_1 c_2 [d]_k$  / <ESC> “&”  $y c_1 c_2 [d]_k$  : Download character definition (valid only when optional memory is installed)
- (10) 1B 2A  $m n_1 n_2 [d]_k$  / <ESC> “\*”  $m n_1 n_2 [d]_k$  : Bit image mode specification
- (11) 1B 3F  $n$  / <ESC> “?”  $n$  : External registration character deletion (valid only when optional memory is installed)
- (12) 1B 32 / <ESC> “2” : 1/6 - inch line pitch setting
- (13) 1B 33  $n$  / <ESC> “3”  $n$  : Minimum - pitch - unit line pitch setting
- (14) 1B 40 / <ESC> “@” : Printer initialization
- (15) 1B 41  $n$  / <ESC> “A”  $n$  : Line spacing setting
- (16) 1B 43  $n$  / <ESC> “C”  $n$  : Page length (number of lines) setting



- (17) 1B 44  $[d]_k$  00 / <ESC> “D”  $[d]_k$  <NUL> : Horizontal tab position setting
- (18) 1B 4A  $n$  / <ESC> “J”  $n$  : Printing and minimum - pitch - unit paper feed
- (19) 1B 4B  $n$  / <ESC> “K”  $n$  : Backward paper feed
- (20) 1B 52  $n$  / <ESC> “R”  $n$  : International character specification
- (21) 1B 56  $n$  / <ESC> “V”  $n$  : Right rotation 90°
- (22) 1B 58  $n m$  / <ESC> “X”  $n m$  : Setting the turning of the motor excitation
- (23) 1B 63 31  $n$  / <ESC> “c” “1”  $n$  : Internal processing setting
- (24) 1B 64  $n$  / <ESC> “d”  $n$  : Printing and  $n$  - line feed
- (25) 1B 65  $n$  / <ESC> “e”  $n$  : Printing and backward  $n$  - line feed
- (26) 1B 70  $m n_1 n_2$  / <ESC> “p”  $m n_1 n_2$  : Peripheral drive
- (27) 1B 73  $n$  / <ESC> “s”  $n$  : Printing speed setting
- (28) 1B 74  $n$  / <ESC> “t”  $n$  : Character code table selection
- (29) 1B 75  $n$  / <ESC> “u”  $n$  : Peripheral status request
- (30) 1B 7B  $n$  / <ESC> “{”  $n$  : Upside - down printing setting / cancellation
- ★(31) 1C 21  $n$  / <FS> “!”  $n$  : two byte characters printing mode collective specification
- ★(32) 1C 26 / <FS> “&” : two byte characters printing mode specification
- ★(33) 1C 2E / <FS> “.” : two byte characters printing mode cancellation
- (34) 1C 39  $n$  / <FS> “9”  $n$  : Detection function enable / disable setting
- ★(35) 1C 43  $n$  / <FS> “C”  $n$  : Japanese Kanji code system selection
- (36) 1C 45  $n$  / <FS> “E”  $n$  : Correction of impressed energy
- ★(37) 1C 57  $n$  / <FS> “W”  $n$  : two byte characters double height and width printing specification / cancellation
- ★(38) 1C 74  $n$  / <FS> “t”  $n$  : two byte characters system selection

- (39) 1D 26  $m x y_1 y_2 [d]_k$  / <GS> "&"  $m x y_1 y_2 [d]_k$  : Registration of image data
- (40) 1D 27  $m n$  / <GS> "\""  $m n$  : Print registered image data
- (41) 1D 3C / <GS> "<" : Mark detection execution
- (42) 1D 41  $m n$  / <GS> "A"  $m n$  : After - mark detection head detection distance setting
- (43) 1D 45  $n$  / <GS> "E"  $n$  : Print quality setting
- (44) 1D 56  $n m$  / <GS> "V"  $n m$  : Paper cutting
- (45) 1D 65  $n m$  / <GS> "e"  $n m$  : Bar code width setting
- (46) 1D 68  $n$  / <GS> "h"  $n$  : Bar code height setting
- (47) 1D 68  $m n [d]_k$  / <GS> "k"  $m n [d]_k$  : Bar code printing
- (48) 1D 77  $n$  / <GS> "w"  $n$  : Bar code width magnification setting

Those commands marked with ★ are applicable to the two byte characters only and are not applicable to the standard (English) models.

## VI. CHARACTER CODE PAGES

### A. PAGE 0 ENGLISH / JAPANESE

High - order Low - order digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	·	p	—	—	SP	—	タ	ミ	—	×
1			!	1	A	Q	a	q	—	—	。	ア	チ	ム	ト	円
2			"	2	B	R	b	r	—	—	「	イ	ツ	メ	+	年
3			#	3	C	S	c	s	■	—	」	ウ	テ	モ	—	月
4			\$	4	D	T	d	t	■	—	、	エ	ト	ヤ	▲	日
5			%	5	E	U	e	u	■	—	・	オ	ナ	ユ	▲	時
6			&	6	F	V	f	v	■	—	ヲ	カ	ニ	ヨ	▼	分
7			'	7	G	W	g	w	■	—	ア	キ	ヲ	ラ	▼	秒
8			(	8	H	X	h	x		—	イ	ク	ネ	リ	▲	〒
9	HT	EM	)	9	I	Y	I	y	■	—	ウ	ケ	ノ	ル	♥	市
A	LF		*	:	J	Z	j	z	■	—	エ	コ	ハ	レ	♦	区
B		ESC	+	:	K		k	{	■	—	オ	サ	ヒ	ロ	▲	町
C	FF	FS	,	<	L	¥	l	!	■	—	ヤ	シ	フ	ワ	●	村
D		GS	-	=	M	]	m	}	■	—	ユ	ス	ヘ	ン	○	人
E			.	>	N	^	n	~	■	—	ヨ	セ	ホ	^	/	■
F			/	?	O	_	o	SP	+	—	ソ	ツ	ソ	マ	°	＼ SP

## B. PAGE 1 ENGLISH / EUROPEAN

High - order Low - order digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	'	p	Ç	Ê	á	÷	⊥	⊥	α	≡
1			!	1	A	Q	a	q	ü	æ	í	⊗	⊥	⊥	β	±
2			"	2	B	R	b	r	é	Æ	ó	⊗	⊥	⊥	Γ	≥
3			#	3	C	S	c	s	â	ô	û		⊥	⊥	π	≤
4			\$	4	D	T	d	t	ä	ö	ñ	⊥	⊥	⊥	Σ	∫
5			%	5	E	U	e	u	à	ò	Ñ	⊥	⊥	⊥	σ	∫
6			&	6	F	V	f	v	á	ú	ª	⊥	⊥	⊥	μ	÷
7			'	7	G	W	g	w	ç	ù	º	⊥	⊥	⊥	τ	≈
8			(	8	H	X	h	x	ê	ý	¿	⊥	⊥	⊥	Φ	°
9		HTEM	)	9	I	Y	I	y	ë	Ö	⊥	⊥	⊥	⊥	Θ	•
A		LF	*	:	J	Z	j	z	è	Ü	⊥	⊥	⊥	⊥	Ω	·
B		ESC	+	:	K	[	k	{	ı	é	½	⊥	⊥	■	δ	✓
C		FF FS	.	<	L	¥	ı	ı	£	¼	⊥	⊥	⊥	■	∞	n
D		GS	-	=	M	ı	m	}	ı	¥	ı	⊥	⊥	■	φ	²
E			.	>	N	^	n	˘	Ä	Pt	⊥	⊥	⊥	⊥	ε	▪
F			/	?	O	_	o	SP	Ä	f	)	⊥	⊥	⊥	⊥	SP

(In these tables, "SP" indicates a space.)

Note:

1. Each code is represented in hexadecimal notation.
2. If an undefined code (<00> to <1F>) or an undefined <ESC>, <FS>, or <GS> sequence listed in this table is received, an abnormal operation may occur. (However, when image print

data, character registration data, or command parameters are received, they are handled as ordinary data.)